查询AP1301A-S供应商

AP1301/2/4/5

Single Coil Fan Motor Full Wave Driver

■ Features

- Compatible to a Hall element
- Operating voltage (V_{CC}) : 4V to 20V
- Lock shutdown and automatic restart
- Speed indication output (FG) named as AP1301/4
- Rotation detection output (RD) named as AP1302/5
- Output current(AP1301/2) I_O=500mA$_{(max)}$
- Output current(AP1304/5) I_O=350mA$_{(max)}$
- Operating temperature (T_{opr}) : -30ºC to +85ºC
- SOP-8L/ SOP-8L EP package
- Include Thermal Shutdown circuit

■ Application

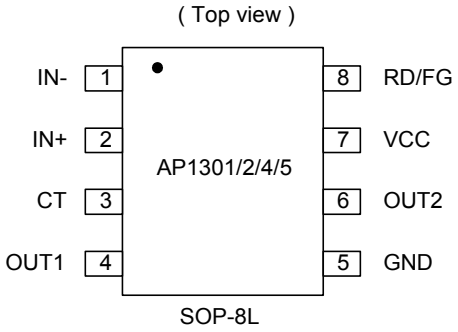
- CPU cooling fans

■ General Description

The AP1304/5 is single phase full wave drive design, which is suited for small fans (such as CPU cooling fans). The low switching noise and effective motor drive are another advantage. All functions, including lock shutdown, automatic restart, rotation detection (RD), and speed indication output (FG) have been incorporated into one chip. When the motor is under lock condition, lock shutdown function turns off the output current. When the lock condition is removed, the IC automatically restarts and allows DC fan to run. In addition, the RD function is to detect the motor status and the FG is to provide the rotation speed.

The AP1301/2 are heat sink version of AP1304/5. From function wise, AP1301 is the same as AP1304, and AP1302 is the same as AP1305.

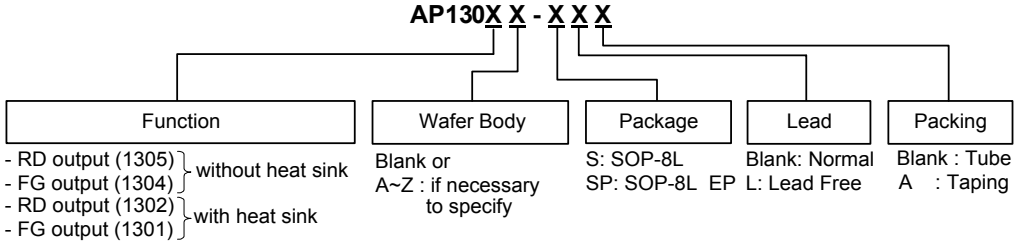
■ Pin Assignment



■ Pin Descriptions

Name	Description
VCC	Power input
IN+	Hall input
RD/FG	Rotation detection / Speed indication
IN-	Hall input
GND	Ground
CT	Timing capacitor
OUT2	Driver output
OUT1	Driver output

■ Ordering Information



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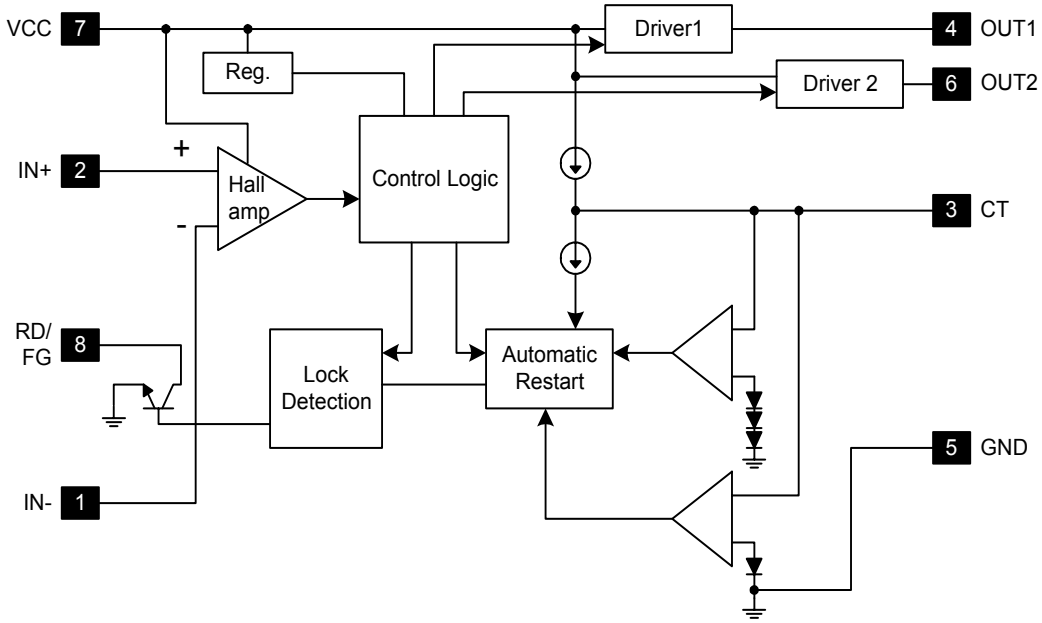
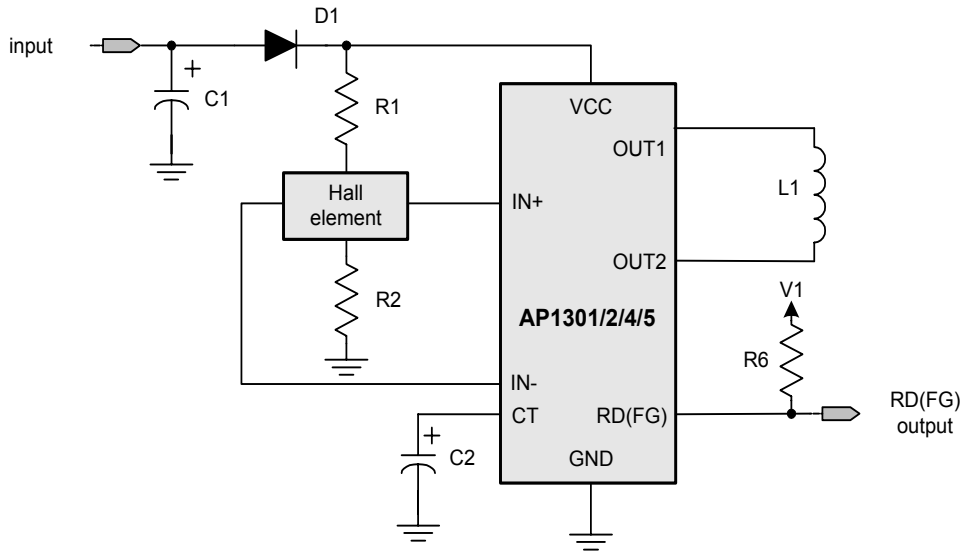
■ Block Diagram



■ Application Circuit



■ Absolute Maximum Ratings (T_A=25ºC)

Parameter	Symbol		Rating	Unit
Input voltage	V_{CC}		20	V
Output current	I_{OUT}	AP1304/5	350	mA
		AP1301/2	500	
Maximum output withstand voltage	Vout		20	V
RD/FG maximum output withstand voltage	Vr/Vf		20	V
RD/FG maximum output current	Ir/If		5	mA
Allowable power dissipation	P_D	AP1304/5	550*(note1)	mW
		AP1301/2	1000	
Operating temperature	T_{OPR}		-30 to +85	ºC
Storage temperature	T_{STG}		-55 to +150	ºC

*note1 : Reduced by 5.5mW for each increase in Ta of 1**ºC** over 25 **ºC**

■ Electrical Characteristics (T_A=25ºC, V_{CC}=5V, unless otherwise noted)

Parameter	Symbol	Conditions	Rating			Unit
			Min.	Typ.	Max.	
Power supply voltage	Vcc		4	--	20	V
Hall input voltage (DC+AC)	V_{BH}	Includes the amplitude of signal	0.2	--	V_{CC}-1.5	V
Supply current	I_{CC}	The output is off	--	6.5	10	mA
Charge current	I_{CHG}	V_{CT} = 1.5V	1.9	2.8	3.7	uA
Discharge current	I_{DHG}	V_{CT} = 1.5V	0.32	0.46	0.60	uA
Charge/discharge ratio	R_{CD}	I_{GHG}/I_{DCHG}	5.0	6.0	7.0	--
Output Low Level Voltage	Vol	Io=200mA		0.2	0.3	V
Output High Level Voltage	Voh	Io=200mA	3.9	4.1		V
Hall input sensitivity	V_{HN}	Zero peak value (including offset and hysteresis)		7	15	mV
RD/FG pin output low	V_{RDL}, Vfgl	I_{RD} , Ifg = 5mA	--	0.1	0.3	V
RD/FG output pin leakage current	Irdl,Ifgl	Vrd,Vfg=15V			30	uA

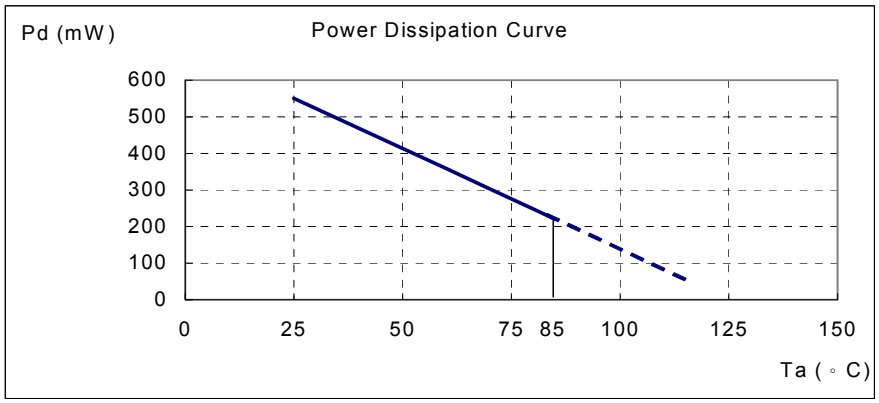
Truth Table

IN-	IN+	CT	OUT1	OUT2	RD	FG	Mode
H	L	L	H	L	L	L	Rotating
L	H	L	L	H	L	H	Rotating
-	-	H	off	off	off	-	Lockup protection activated

Latch-type RD output is low during rotation and high during stop

■ Performance Characteristics (without heat sink AP1304/5)

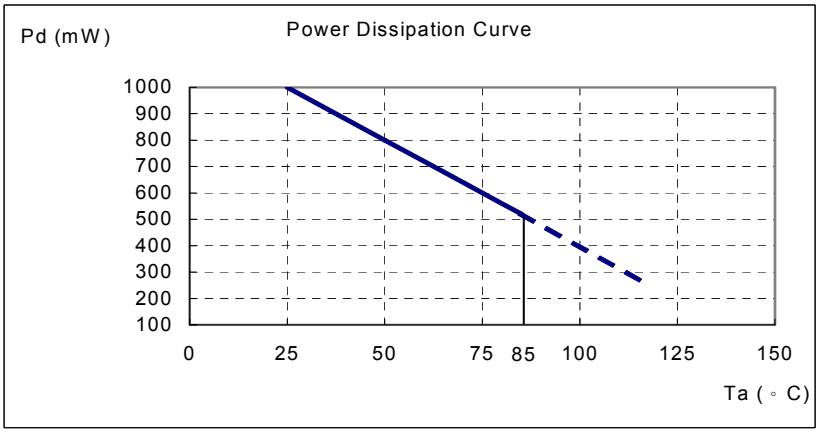
Ta (°C)	25	50	60	70	80	85	90	95	100	105	110	115	120
Pd (mW)	550	413	358	303	248	220	193	165	138	110	83	55	28



Note：SOP-8L package.

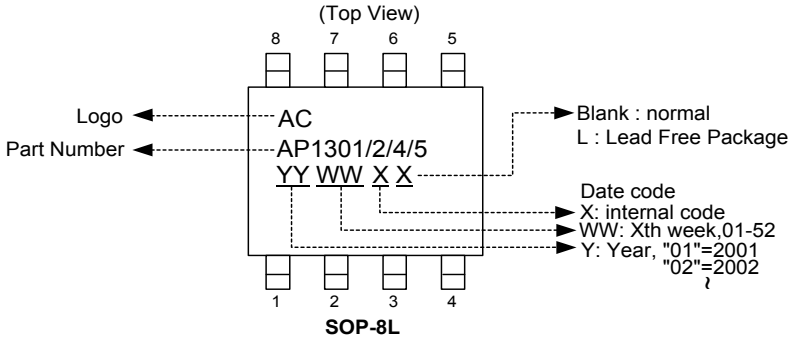
■ Performance Characteristics (with heat sink AP1301/2)

Ta (°C)	25	50	60	70	80	85	90	95	100	105	110	115	120
Pd (mW)	1000	800	720	640	560	520	480	440	400	360	320	280	240



Note：SOP-8L EP package.

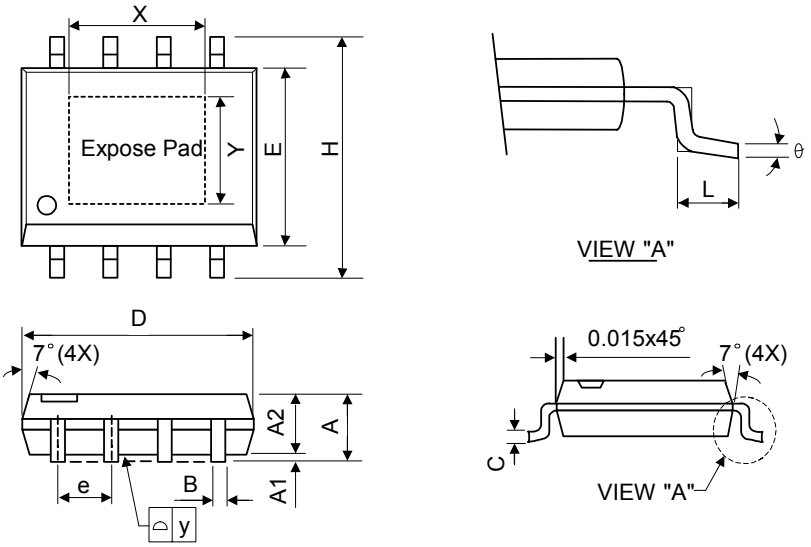
■ Marking Information



SOP-8L

■ Package Information

Package Type: SOP-8L (Normal / Expose Pad)



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	1.40	1.60	1.75	0.055	0.063	0.069
A1	0.10	-	0.25	0.040	-	0.100
A2	1.30	1.45	1.50	0.051	0.057	0.059
B	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.010
D	4.80	5.05	5.30	0.189	0.199	0.209
E	3.70	3.90	4.10	0.146	0.154	0.161
e	-	1.27	-	-	0.050	-
H	5.79	5.99	6.20	0.228	0.236	0.244
L	0.38	0.71	1.27	0.015	0.028	0.050
y	-	-	0.10	-	-	0.004
θ	0^O	-	8^O	0^O	-	8^O
(Expose pad)						
X	-	2.92	-	-	0.115	-
Y	-	2.34	-	-	0.092	-